

# International Geophysical Calendar for 1971

(See other side for information on the use of this Calendar)

JANUARY						
S	M	T	W	T	F	S
					1	2
[3	4	5	6	7	8	9
10	11	(12)	(13)	(14)	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

FEBRUARY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	(9)	(10)	(11)	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

MARCH						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	(16)	(17)	(18)	19	20
21*	22*	23*	24*	25*	26*	27*
28	29	30	31			

APRIL						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	(13)	(14)	(15)	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

MAY						
S	M	T	W	T	F	S
						1
2	3	4	(5)	(6)	7	8
9	10	(11)	(12)	(13)	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

JUNE						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	(8)	(9)	(10)	(11)	(12)
13	14	(15)	(16)	(17)	18	19
20*	21*	22*	23*	24*	25*	26*
27	28	29	30			

JULY						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	(20)	(21)	(22)	23	24
25	26	27	28	29	30	31

AUGUST						
S	M	T	W	T	F	S
1]	2]	3	4	5	6	7
8	9	(10)	(11)	(12)	(13)	(14)
15	16	(17)	(18)	(19)	(20)	(21)
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	(14)	(15)	(16)	17	18
19*	20*	21*	22*	23*	24*	25*
26	27	28	29	30		

OCTOBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	(19)	(20)	(21)	(22)	23
24	25	26	27	28	29	30
31						

NOVEMBER						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	(16)	(17)	(18)	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER						
S	M	T	W	T	F	S
			1	2	3	4
5]	6]	7]	8	9	10	11
[12]	[13]	[14]	(15)	(16)	17	18
19*	20*	21*	22*	23*	24*	25*
26	27	28	29	30	31	

1972 JANUARY						
S	M	T	W	T	F	S
						1
2	[3	[4	5	6	7	8
9	10	11	12	13	14	15
[16]	17	(18)	(19)	(20)	21	22
23	24	25	26	27	28	29
30	31					

(12) Regular World Day (RWD)

(13) Priority Regular World Day (PRWD)

(10) Quarterly World Day (QWD)  
also a PRWD and RGD

6 Regular Geophysical Day (RGD)

[25] Day of Solar Eclipse

\* Micropulsation Interval Day

[9 10] World Geophysical Interval (WGI)

[3] Day with unusual meteor shower activity,  
Northern Hemisphere

[15] Day with unusual meteor shower activity,  
Southern Hemisphere

[24 25] Airglow and Aurora Period

Note: International Hydrological Decade Field Year, April 1, 1971 - Sept. 30, 1972.

## EXPLANATIONS

This Calendar continues the series begun for the IGY years 1957-58, and is issued annually to recommend dates for solar and geophysical observations which cannot be carried out continuously. Thus, the amount of observational data in existence tends to be larger on Calendar days. The recommendations on data reduction and especially the flow of data to **World Data Centers (WDCs)** in many instances emphasize Calendar days. The Calendar is prepared by the **International Ursigram and World Days Service (IUWDS)** with the advice of spokesmen for the various scientific disciplines. For greater detail concerning explanations or recommendations your attention is called to information published periodically in **STP Notes**, **IGA News**, **IUGG Chronicle**, **URSI Information Bulletin** or other scientific journals.

The definitions of the designated days remain as described on previous Calendars. **Universal Time (UT)** is the standard of time for all world days. **Regular Geophysical Days (RGD)** are each Wednesday. **Regular World Days (RWD)** are three consecutive days each month, always Tuesday, Wednesday and Thursday near the middle of the month. **Priority Regular World Days (PRWD)** are the RGD which fall on Wednesdays. **Quarterly World Days (QWD)** are one day each quarter and are the PRWD which fall in the **World Geophysical Intervals (WGI)**. The **WGI** are fourteen consecutive days in each season, beginning on the second Monday of the selected months, and normally shift from year to year. In 1971 the **WGI** will be in February, May, August and November.

The **Solar Eclipses** are February 25 (partial) observable in the eastern part of Greenland, Europe, the western part of Asia, and the northwestern part of Africa; July 22 (partial) observable in the northwestern part of Alaska, and the northeastern part of Asia; and August 20-21 (partial) observable in the southeastern part of Australia, New Zealand, and parts of Antarctica. Geophysical stations in the eclipse zones and their conjugate areas treat these days as world days and undertake special programs to study eclipse effects on the earth's atmosphere.

**Meteor Showers** (selected by P. M. Millman, Ottawa) include important visual showers and also unusual showers observable mainly by radio and radar techniques. The dates are coded to indicate whether the shower is observable in the northern or southern hemisphere.

The occurrence of unusual solar or geophysical conditions is announced or forecast by the IUWDS through various types of geophysical "Alerts" which are widely distributed by telegram and radio broadcast on a current schedule. Stratospheric warnings (**STRATWARM**) are also designated. The meteorological telecommunications network coordinated by WMO carries these worldwide Alerts once daily soon after 0400 UT. For definitions of Alerts see IUWDS "Synoptic Codes for Solar and Geophysical Data, Second Revised Edition 1969" and its amendments. **Retrospective World Intervals** are selected and announced in **STP Notes** and elsewhere to provide additional analyzed data for particular events studied in the Inter-Union Commission on Solar-Terrestrial Physics (IUCSTP) projects.

## RECOMMENDED SCIENTIFIC PROGRAMS OPERATIONAL EDITION

(The following material was reviewed in 1970 by spokesmen of IUCSTP and at the 13th Meeting of COSPAR as suitable for coordinated geophysical programs in 1971.)

**Airglow and Auroral Phenomena.** Airglow and auroral observatories operate with their full capacity around the New Moon periods. However, for progress in understanding the mechanism of, inter alia, low latitude aurora, the coordinated use of all available techniques, optical and radio, from the ground and in space is required. Thus, for the airglow and aurora periods on the Calendar ionosonde, incoherent scatter, special satellite or balloon observations, etc., are especially encouraged.

**Atmospheric Electricity.** Not-continuous measurements and data reduction for continuous measurements of atmospheric electric current density, field, conductivities, space charges, ion number densities, ionosphere potentials, condensation nuclei, etc.; both at ground as well as with radiosondes, aircraft, rockets; should be done with first priority on the **RGD** each Wednesday, beginning on 6 January 1971 at 0600 UT, 13 January at 1200 UT, 20 January at 1800 UT, 27 January at 0000 UT, 3 February at 0600 UT, etc. (beginning hour shifts six hours each week, but is always on a Wednesday). Minimum program is at the same time on **PRWD** beginning with 20 January at 1800 UT. Data reduction for continuous measurements should be extended, if possible, to cover at least the full **RGD** including, in addition, at least 6 hours prior to indicated beginning time. Measurements prohibited by bad weather should be done 24 hours later. Results on sferics and ELF are wanted with first priority for the same hours, short-period measurements centered around the minutes 35-50 of the hours indicated. The World Data Centre for Atmospheric Electricity, 7 Malaya Spasskaya, Leningrad K-18, USSR, is the collection point for data and information on measurements. Intensification Intervals of the Atmospheric Electricity Ten-Year Program will be announced separately.

**Geomagnetic Phenomena.** It has always been a leading principle for geomagnetic observatories that operations should be as continuous as possible and the great majority of stations undertake the same program without regard to the Calendar. Special efforts recommended are:

(a) Micropulsations: to improve the cooperation between observatories in the analysis of worldwide distribution of different types of micropulsations, it is recommended both to the fixed observatories as well as to research groups making special investigations of micropulsations to con-

duct quick run registrations of pulsations in the following time intervals during the year: March 21-27, June 20-26, September 19-25, December 19-25.

(b) Stations equipped for making magnetic observations, but which cannot carry out such observations and reductions on a continuous schedule are encouraged to carry out such work at least on **RWD** (and during times of **MAGSTORM** Alert).

**Ionospheric Phenomena.** During the IASY period (ending 1971) special attention will be concentrated on particular events which cannot be forecast in advance with reasonable certainty. These will be identified by **Retrospective World Intervals**. The importance of obtaining full observational coverage is therefore stressed even if it is possible to analyze the detailed data only for the chosen events. In the case of vertical incidence soundings, the need to obtain quarter-hourly ionograms at as many stations as possible is particularly stressed and takes priority over recommendation (a) below when both are not practical.

For the vertical incidence (VI) sounding program, the summary recommendations are: (a) soundings to be made at five minute intervals on **RWDs** for stations normally making observations every quarter hour; all other stations are recommended to make at least quarter-hourly observations on **RWDs**; (b) f-plots are made for high latitude stations and for the so-called "representative" stations at lower latitudes for all days (i.e., including **RWDs** and **WGIs**), (Continuous records of ionospheric parameters are acceptable in place of f-plots at temperate and low latitude stations); (c) profile parameters  $h_c$ ,  $q_c$  or recommended similar parameters to be determined and sent to WDCs for **RWDs** for all stations except those undertaking full profile programs or producing monthly median profiles; (d) copies of hourly ionograms with appropriate scales for **RWDs** are to be sent to WDCs; (e) stations in the eclipse zone and its conjugate area should take continuous observations on solar eclipse days and special observations on adjacent days. See also recommendations under **Airglow and Auroral Phenomena**.

For incoherent scatter observation program, every effort should be made to obtain measurements at least on all **RWDs** and intensive series should be attempted whenever possible in **WGIs** or the **Airglow and Aurora** periods. The need for collateral VI observations with not more than quarter-hourly spacing at least during all observation periods is stressed.

For the ionospheric drifts program, observations are made at least on all **RWDs**, on all **WGIs**, on every Wednesday (**RGDs**) and on every Thursday. It is essential that sufficient observations be made to determine the diurnal variations. Hourly tabulations for all days mentioned are sent to the WDCs.

For the ionospheric absorption program, hourly observations are made at least on all **RWDs** and hourly tabulations sent to WDCs. Observations should be continuous on **solar eclipse** days for stations in eclipse zone and in its conjugate area. Special efforts should be made to obtain additional absorption measurements at temperate latitude stations during the period of Absorption Winter Anomaly, particularly on days of abnormally high or abnormally low absorption (approximately November-March, Northern Hemisphere; May-September, Southern Hemisphere).

For back-scatter and forward-scatter programs, observations should be made and analyzed on all **RWDs** at least.

For synoptic observations of mesospheric (D region) electron densities, several groups have agreed on using the **RGD** for the hours around noon.

For ELF noise measurements involving the earth-ionosphere cavity resonances any special effort should be concentrated during the **WGIs**.

It is recommended that more intensive observations in all programs be considered on days of **unusual meteor activity**.

**Meteorology.** Particular efforts should be made to carry out an intensified program on the **RGD** — each Wednesday, UT. A desirable goal would be the scheduling of meteorological rocketsondes, ozone sondes and radiometer sondes on these days, together with maximum-altitude rawinsonde ascents at both 0000 and 1200 UT.

During **WGI** and **STRATWARM** Alert intervals, intensified programs are also desirable, preferably by the implementation of **RGD**-type programs (see above) on Mondays and Fridays, as well as on Wednesdays.

**Solar Phenomena.** Observatories making specialized studies of solar phenomena, particularly using new or complex techniques, such that continuous observation or reporting is impractical, are requested to make special efforts to provide to WDCs data for **solar eclipse** days, **RWDs**, and during **PROTONALERTs** or **XRAYALERTs**. The attention of those recording solar noise spectra, solar magnetic fields and doing specialized optical studies is particularly drawn to this recommendation.

**Space Research, Interplanetary Phenomena, Cosmic Rays, Aeronomy.** Experimenters should take into account that observational effort in other disciplines tends to be intensified on the days marked on the Calendar, and schedule balloon and rocket experiments accordingly if there are no other geophysical reasons for choice. In particular it is desirable to make rocket measurements of ionospheric characteristics on the same day at as many locations as possible; where feasible, experimenters should endeavor to launch rockets to monitor at least normal conditions on the **Quarterly World Days (QWD)** or on **RWDs**, since these are also days when there will be maximum support from ground observations. Also, special efforts should be made to assure recording of telemetry on **QWD** and **Airglow and Aurora** periods of experiments on satellites and of experiments on spacecraft in orbit around the sun.

The **International Ursigram and World Days Service (IUWDS)** is a permanent scientific service of the International Union of Radio Science (URSI), with the participation of the International Astronomical Union and the International Union Geodesy and Geophysics. IUWDS adheres to the Federation of Astronomical and Geophysical Services of the International Council of Scientific Unions. The IUWDS coordinates the international aspects of the world days program and rapid data interchange, and also publishes subsequently **Condensed Calendar Records** of solar and geophysical indices and events, published in **STP Notes**.

This Calendar for 1971 has been drawn up by A. H. Shapley, Chairman, and J. V. Lincoln, Deputy Secretary, of the IUWDS Steering Committee, in close association with the IUCSTP Commission and the Reporters and spokesmen for the various scientific disciplines and COSPAR. Similar Calendars have been issued annually beginning with the IGY, 1957-58, and have been published in various widely available scientific publications.

Published for the International Council of Scientific Unions with the financial assistance of UNESCO (Unesco subvention - 1970-DG/2.1/414/30).

Additional copies are available upon request to IUWDS Secretary, Dr. P. Simon, Ursigrammes Observatoire, 92 Meudon, France, or IUWDS Deputy Secretary, Miss J. V. Lincoln, WDC-A Upper Atmosphere Geophysics, ESSA, Boulder, Colorado, 80302, U.S.A.